

**Texas
Guide**

for controlling

**External Parasites
of
Livestock and Poultry**



**THE AGRICULTURAL AND MECHANICAL
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Texas Guide for Controlling External Parasites of LIVESTOCK AND POULTRY

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EXTERNAL PARASITES of livestock and poultry are a constant menace. They lower production of meat, milk and eggs by sucking blood from the animals; they transmit diseases; and they cause loss in energy from annoyance. Organic insecticides will control the major external parasites.

How to Use Insecticides

Always weigh or measure an insecticide carefully to insure the correct dosage. Use enough spray to cover the animal thoroughly, especially for control of ticks, lice and mites. Adequate spraying equipment, consisting of a high-volume piston pump sprayer with a suitable agi-

tator, must be used when applying sprays made from wettable powders. The sprayer should be operated at a pressure of at least 200 pounds per square inch. The use of coarse spray nozzles is desirable. Sprays give adequate control of external parasites and frequently are preferred to dips because they are more economical; however, if dips are used, follow instructions on manufacturer's label.

Insecticide Formulations

All organic insecticides are toxic to warm-blooded animals and should be handled with caution. Make sure exact dosages are used. Carefully weigh or measure the insecticide before mixing. Follow the directions for amount of insecticides to use as given in these recommendations or on the manufacturer's label.

Wettable powders or emulsifiable concentrates may be used. There may be considerable difference between emulsifiable concentrates for plant use and those of the same insecticide which are designed for animals. If manufactured especially for plant use, the insecticide may contain a solvent that would speed up absorption

by the animal and result in poisoning. Also, the amount of emulsifier may not be adequate to keep the oil in an emulsion form. *Only emulsifiable concentrates manufactured for use on livestock are recommended.*

Cautions

The Food and Drug Administration has established tolerances for several insecticides recommended for use on livestock. Use only the insecticides which have been approved. Read thoroughly the remarks and safety restrictions in the column opposite each insecticide in the guide and on the manufacturer's label.

Since residue studies indicate that if beef animals are sprayed, dipped or dusted with DDT, the tolerance may be exceeded, DDT is *omitted* from the recommendations for controlling pests of *beef cattle*.

Flies

Manure should be spread thinly in fields so that fly eggs and larvae will be killed by drying and heat. If manure is stored in compost piles, the material added each day should be sprinkled with equal quantities of calcium cyanamid and superphosphate (1 pound of mixture to each bushel of manure). The addition of water will spread the chemicals more thoroughly and thus give better control of fly larvae. Chemical control should be used also as an aid to prevent fly breeding.

In dairy barns, baits containing malathion, diazinon and Dipterex may be used in addition to residual sprays for housefly control. Follow recommendations on manufacturers label.

Spray dairy barns with 0.3 to 0.5% lindane, 0.5% Diazinon, 1% Ronnel (Korlan), 2.5% malathion or 5% methoxychlor. Thoroughly cover the resting areas where flies congregate. *Do not use materials in milkrooms or contaminate animal feed or water.*

Poultry manure in cage laying houses may be treated with a 2½ percent malathion spray as needed for fly larval control.

Several insecticides may be used in bait to control adult flies in poultry houses. In most instances, insecticides in bait form can be purchased ready to use. Follow directions on manufacturer's label. Insecticides recommended for bait use are malathion, Dipterex, diazinon, DDVP, and ronnel (Korlan). Dipterex may be used in cage laying houses for adult fly control. Special precautions must be taken to prevent contamination of food, feed or drinking water.

For controlling house flies on dairy cattle, use a water spray containing 0.1% pyrethrin and 1% synergist. Apply at the rate of 1 quart per animal. This spray also is effective for a few hours if applied as a mist using about 1 ounce per animal. If an oil spray containing these toxicants is used, it should also be applied as a mist using only 1 ounce per animal twice a day.

Treatments recommended for horn fly control on dairy cattle may also help to control house flies.

STABLE FLIES—Stable flies are blood suckers and irritate animals. Loss in flesh and reduction of milk flow may occur. These flies breed in mixtures of manure and decaying litter around barns. Disposal of manure and litter should be handled as indicated for house flies.

Insecticides cannot completely control stable flies. Breeding areas must be eliminated. Areas where flies are found resting should be sprayed as for house fly control.

HORN FLIES—If horn flies are not controlled, they may cost producers 20 to 30 pounds of beef per animal each year. These flies breed in fresh manure.

HORSE FLIES AND DEER FLIES—Horse flies and deer flies are vicious biters and cause livestock to lose weight. These flies may carry anaplasmosis, anthrax and other diseases. Most insecticides have proved ineffective for the control of horse flies. Keep animals out of low bottoms near breeding areas during the breeding season.

SCREW-WORM FLIES—Female screw-worm flies are attracted to fresh wounds where they deposit eggs.

The screw-worms feed on the flesh and may kill animals if the wounds are not treated.

BLACK BLOW FLY—Wool maggots attack sheep, but do not cause death directly. However, secondary infections may follow wool maggots. They appear around the rump in urine-soaked wool and near wounds.

HEEL FLIES—Cattle grubs are immature forms of heel flies. Cattle often are seen in the spring running from heel flies or standing in water to protect themselves from the flies that are trying to lay their eggs. The grubs hatch from eggs that usually have been laid below the hock and bore into the flesh. They spend several months tunneling in the animal's body. The grubs move up to the back in the fall and winter to complete their development.

Lice

Several species of lice attack cattle. Some of the species are blood suckers and one species is a biting louse. Cattle infested with lice have a rough, coarse appearance and do not gain normally. Lice are more abundant during the winter and spring when the hair is long and control can be obtained by treating cattle in the fall.

The hog louse is a blood-sucking parasite. The lice transfer from one animal to another when the animals come in close contact.

Several species of lice attack sheep and goats. Sheep and goats infested with lice will bite and pull wool which encourages infestation of screw-worms.

Poultry are attacked by several species of biting lice that irritate the birds and cause loss of weight, egg production and even death.

Mites

Mange mites burrow into the skin, producing tunnels in which the eggs are deposited. Scab mites deposit their eggs at the base of hairs or in the skin and produce scabs.

The chicken mite is an intermittent feeder, usually remaining on the host a short time. The northern fowl mite and the tropical fowl mite usually spend their entire life cycle on the host.

Depluming mites burrow into the skin of chickens and cause irritation around the base of the feathers. These mites may be controlled by dipping the chickens in a mixture of 2 ounces sulfur and 1 ounce soap in 1 gallon water. Wet the feathers to the skin.

Ticks

Several species of ticks attack animals. The lone star tick occurs principally in wooded or brush areas. The Gulf Coast tick generally is found within 150 miles of the Gulf Coast. The adults attack livestock around the ears, poll and top of neck. The spinose ear tick is found primarily in dry areas. These ticks attack deep within the ears of livestock. The immature tick is picked up by animals around mineral boxes, feed troughs or watering troughs. To eliminate these breeding areas, move the mineral boxes and troughs periodically and spray the infested areas with creosote or a mixture of one-half crankcase oil and one-half kerosene. (See table for sprays to use in control.)

The fowl tick (blue bug) injures poultry by sucking blood, causing loss in weight, lowered egg production and blemishes which greatly reduce market value.

Fleas

Several species of fleas attack poultry and household pets. Since the immature stages of the insect are spent in the soil, fleas often become a nuisance in garages and home lawns. Fleas may serve as intermediate hosts for certain internal parasites of household pets and may spread diseases.

See L-311, Texas Guide for Controlling Household Insects, for flea control on dogs.

To control fleas on the lawn and in garages, use a 2½ percent malathion spray, 4 percent malathion dust or 0.5% diazinon spray. See the table for use of malathion on poultry.

Rubbing Devices for Horn Fly Control on Beef Cattle

Back rubbers may be used with some degree of success in suppressing horn fly populations. However, under most conditions sprays will give better results.

The degree of control usually depends upon how well the cattle use back rubbers.

The rubbing devices probably are more successful in feed lots and trap pastures without trees than in wooded pastures with trees and other competitive structures on which the cattle may rub instead of the back rubber.

The following chart lists the dosages and restrictions for insecticides to use in a back rubber:

INSECTICIDE	AMOUNT TO MIX WITH 1 GAL. OIL FOR 20 FT. OF CABLE	MIN. DAYS FROM LAST APPLICATION TO SLAUGHTER
Ronnel (Korlan) 24% E. C.*	8 oz. (1 cup)	42
Ronnel (Korlan) 12% E. C.*	16 oz. (2 cups)	42
Toxaphene 60% E. C.*	11 oz. (1¾ cups)	28
Methoxychlor 25% E. C.*	26 oz. (3¼ cups)	None
Malathion 50% E. C.*	5 oz. (⅝ cup)	None

*Use No. 2 diesel oil, kerosene or light mineral oil. Do not use burnt lube oil. Do not allow animals to become overexposed to oil in back rubbers.

Read the Label—Follow Directions

If directions for use as given on the manufacturer's label are carefully followed, you may be reasonably certain that your livestock, poultry and poultry products are safe from harmful residues.

CONTROL PROGRAM

BEEF ANIMALS AND NONLACTATING DAIRY CATTLE

Insect	Insecticide formulation and strength	Strength and amount of formulation per animal unless otherwise indicated	Minimum days from last application to slaughter	Remarks and safety restrictions
Cattle grubs	Rotenone Ronnel (Trolene) (bolus)	See instructions under dairy animals One 37.5-gram bolus per 300 lb. body weight.	60	Give orally with balling gun or dissolve in water as drench. Treat between May 1 and Aug. 1. Animals should have access to water.
	Co-Ral 0.5% spray	1 gal. in one spraying, or two sprayings 2-4 weeks apart if animals are small or in short coat.	45	Wet skin over entire body. Treat between May 1 and Aug. 1. Do not treat sick animals or calves less than 3 months old; spray animals 3-6 months old only lightly. Do not use Co-Ral with pyrethrins, allethrins or synergist.
Horn flies	Methoxychlor 0.5% spray	2 pt.	0	Apply to backs every 3 weeks or as needed. Do not treat sick animals or calves (with Co-Ral) which are less than 3 months old; spray animals 3-6 months only lightly. Do not treat calves which are less than 1 month old with malathion.
	Delnav 0.15% spray	1-2 qt.	0	
	Toxaphene 0.5% spray	2 qt.	28	
	Malathion 0.5%	2 qt.	0	
	Co-Ral 0.5% spray	1-2 qt.	45	
	Ronnel (Korlan) 0.5% spray	1-2 qt.	56	Do not apply ronnel (Korlan) more frequently than once every 2 weeks. Do not apply to lactating dairy animals or to dry dairy animals within 21 days of freshening.
Lice	Toxaphene 0.5% spray	Amount of sprays of all materials depend on size of animal and amount of hair.	28	Spray thoroughly. Do not treat sick animals. One application is usually sufficient, but a second application may be needed 2 weeks after the first.
	Delnav 0.15% spray		0	Do not reapply Delnav within 2 weeks.
	Methoxychlor 0.5% spray		0	
	Lindane 0.03% spray		30	Do not use lindane on emaciated animals.
	Malathion 0.5% spray		0	
	Ronnel (Korlan) 0.5% spray		56	Ronnel (Korlan). Refer to restrictions under horn flies.
	Co-Ral 0.5% spray		45	Spray thoroughly. Do not treat animals less than 3 months with Co-Ral. Spray animals 3-6 months old lightly.
Ticks	Lindane 0.03% spray	Same as for lice.	30	Spray thoroughly. Repeat after 2-3 weeks if needed. Do not treat sick animals. Do not use lindane on emaciated animals. Do not treat animals less than 3 months old with Co-Ral. Spray animals 3-6 months old lightly. An application will give protection for 2 to 3 weeks.
	Delnav 0.15% spray	Same as for lice.	0	To control ear ticks the ears should be flushed out at low pressure to avoid injury.
	Toxaphene 0.5% spray	Same as for lice.	28	
	Co-Ral 0.5% spray	Same as for lice.	45	
	Ronnel (Korlan) 0.75% spray	Same as for lice.	56	
Spinose ear tick	Lindane 0.75% in xylene-pine oil	½ ounce	0	Apply inside the ear with spring bottom oiler.
Screw-worms	Lindane 3% (EQ335 Smear)	Use minimum amount to treat wound, not more than 3 teaspoons.	0	If smears are used, brush or smear on wound and surrounding area. Do not use excessive amounts.
	Ronnel (Korlan) 5% smear	Use minimum amount to treat wound.	21	Treat twice first week and weekly thereafter until healed. Do not use more than 1 tbsp. of Ronnel smear on baby calves.
	Ronnel (Korlan) 0.5% spray	1 to 4 qt. depending on size of animal.	56	Spray wounds thoroughly and wet entire body. Repeat after 2 weeks if needed.
	Co-Ral 0.5% spray	1 to 4 qt. depending on size of animal.	45	See safety restriction under Ticks. Ronnel, Delnav and Co-Ral are also available in a number of other preparations for treating individual screw-worm cases. Follow instructions on manufacturer's label.
	Co-Ral 5.0% dust in squeeze bottle	Apply locally in ears and adjacent head areas, in and around wounds, cuts, scratches, etc.	45	
Mange mites				Certain species of mange mites attacking cattle, sheep and goats are under quarantine regulation. If presence of mange mites is suspected, contact personnel of the Texas Animal Health Commission, 1020 State Office Bldg., Austin, Texas.

DAIRY ANIMALS

Cattle grubs	Rotenone spray (7½ lb. of 5% dust per 100 gal. of water)	2 to 4 qt.	0	Treat at 3-day intervals as long as necessary, starting when grubs make a hole through the skin. Direct spray to backs of animals. Machine should develop at last 200 lb. pressure. If dusts are used, rub thoroughly on back.
	Rotenone 1.5% dust	4 to 5 oz.	0	
Lice	Pyrethrin 0.25% + synergist	Depending on size of animal and amount of hair	0	Spray or dust thoroughly. Repeat application after 2-3 weeks.
	Rotenone spray (1-2 lb. of 5% dust per 100 gal. of water)	Same as above	0	
	Rotenone 0.5-1% dust			
Horn flies	Methoxychlor 50% wettable powder	1 tbsp. per animal	0	Sprinkle on back and neck every three weeks. Do not use Methoxychlor or malathion as spray or dip on dairy cattle.
	Malathion 4-5% dust	2 oz. of 4% dust or 1½ oz. of 5% dust per animal	0	Do not apply malathion dust during or less than 5 hours before milking.
	Pyrethrins 0.05% pyrethrins + synergist	1-2 qt.	0	Apply as a wet spray every 3 to 7 days.
Screw-worms	Smear 62	Minimum amount necessary to treat wound.		Brush or smear on wound and surrounding area, twice first week and then weekly until healed. Do not use more than one tbsp. EQ355 on baby calves.
	Lindane 3% smear (EQ335)	Minimum amount necessary to treat wound, but not over 3 tsp.		
Ticks	Pyrethrin spray 0.1% pyrethrin + synergist. Prepare from commercial preparation by adding water.	Spray animal thoroughly	0	Spray animals thoroughly as needed. Thorough and repeated applications are necessary to reduce tick population.
	Rotenone spray Mix 2 to 4 oz. of 5% rotenone per gal. of water.	Spray animal thoroughly	0	
Spinose ear tick	Lindane 0.75% in xylene-pine oil	½ oz.	0	Apply inside the ear with spring bottom oiler.
Horse flies, Stable flies, and Mosquitoes	For the control of these insects use pyrethrins plus synergist listed for horn fly control.			

Dairymen must use good judgment in the selection and application of insecticides. Certain materials may be used with safety if they are applied correctly, but others are not recommended because they may contaminate the milk with harmful residues. Milk entering interstate commerce can be confiscated by the Food and Drug Administration if it contains insecticidal residues. According to regulations of this organization, insecticidal residues are not permitted in milk. Consequently, careless use of insecticides may be very costly to the milk producer. One important source of contamination of milk with insecticides is hay or forage which the animal consumes. In purchasing baled hay or similar feed material, the dairyman should be sure that the feed is free from harmful insecticidal residues.

SHEEP AND GOATS

Lice and keds (sheep tick)	Co-Ral 0.25% spray		60	
	DDT 0.5% spray or 0.25% dip	Depends on size of animal and amount of hair.	30	Immerse, spray or dust thoroughly. Do not treat sick animals. Use DDT only once, but repeat other treatments after 2-3 weeks if needed. Do not use lindane on emaciated or lactating animals. Use insecticides on milk goats as listed under dairy cattle.
	Delnav 0.15% dip or spray		0	Do not reapply Delnav within 2 weeks. Do not dip animals less than 3 months old.
	Toxaphene 0.25% dip or 0.5% spray		28	Do not treat animals less than 3 months old with Co-Ral.
	Lindane 0.025% dip or 0.05% spray		30	Do not use malathion on animals less than 1 month old.
	Methoxychlor (lice only) 0.25% dip or 0.5% spray		0	In many instances, some species of biting lice have become difficult to control with toxaphene and other chlorinated hydrocarbons. If difficulty has been encountered in controlling lice use malathion, Korlan, Co-Ral or Delnav.
	Malathion 0.25% dip or 0.5% spray		0	
	Ronnel (Korlan) 0.25%-0.5% spray or dip	1-4 qt.	84	Do not apply ronnel (Korlan) more frequently than 2-week intervals.
	Smear 62		0	Brush or smear on and around wound twice first week and then weekly until healed. Use minimum amount necessary to treat wound.
	Lindane 3% (EQ335 Smear)		0	
Screw-worm	Ronnel (Korlan) 5% smear		21	
	Ronnel (Korlan) 0.5% spray		84	Spray wounds thoroughly with Ronnel spray.
	Co-Ral 0.25 spray		45	Wet entire body with Co-Ral spray. Do not treat animals less than 3 months old.
	Lindane 3% (EQ335)		0	Wet infested area and 3 in. around it. See safety restrictions for lice and keds.
	Ronnel (Korlan) 5% smear, 1 part to 9 parts water		0	
Fleece-worms or Wool maggots	Co-Ral 0.25% spray		45	
	Lindane 0.025% dip or 0.05% spray		30	
	Toxaphene 0.5% spray or 0.25% dip		28	
Ticks	Malathion 0.5% spray		28	
	Co-Ral 0.25% spray		45	
	Ronnel (Korlan) 0.25% to 0.5% dip or spray		60	
	Delnav 0.15% dip or spray		0	Do not reapply Delnav within 2 weeks.
Mange mites				Certain species of mange mites attacking cattle, sheep, or goats are under quarantine regulations. If presence of mange mites is suspected, notify personnel of the Texas Animal Health Commission, 1020 State Office Building, Austin, Texas.

SWINE

Insect	Insecticide formulation and strength	Amount of formulation to use per animal unless otherwise indicated.	Minimum days from last application to slaughter	Remarks and safety restrictions
Lice	DDT 0.5% spray or 10% dust	Treat thoroughly; amount will depend on size of animal and amount of hair.	30	Do not treat sick animals. Use lindane and DDT only once, but repeat other treatments after 2-3 weeks if needed. Do not treat animals less than 3 months old with Co-Ral. Spray animals 3-6 months old lightly. Do not use pyrethrins, allethrins, or synergist with Co-Ral.
	Malathion .5% spray		0	
	Lindane 0.05%-0.06% spray or 1% dust		30	
	Methoxychlor 0.5% spray		0	
	Toxaphene 0.5% spray		28	
	Ronnel (Korlan) 0.25-0.5% spray		42	Do not apply ronnel (Korlan) more frequently than 2-week intervals.
	Co-Ral 0.5% spray		45	
	Delnav 0.15% spray		0	Do not reapply Delnav within 2 weeks.
Sarcoptic mange mite	Lindane 0.05-0.06% spray	Treat animals thoroughly. Amount will depend on size and amount of hair.	30	Treat at first signs of the mites. Repeat applications in 10-15 days if necessary. Infested animals should be isolated until mange is cleared up. Do not spray within 30 days of slaughter.

POULTRY

Lice or mites	Co-Ral 0.5% dust	Use as a dust only	45	Dust birds thoroughly. Do not use Co-Ral more often than once weekly.
	Malathion 3% Roost paint or 1% spray	1 pt./150 ft.	0	Paint roost thoroughly.
	or 4-5% dust	1-2 gal./1,000 sq. ft.	0	Apply to litter.
		1 lb./40 sq. ft. litter or 1 lb./100 birds 1 gal./100 birds	0	Apply directly to birds.
Lice only	0.5% spray Nicotine sulfate 40% nicotine solution	1 pt./150-200 ft.	0	Apply directly to birds. Paint on roosts only. Do not apply while birds are in the house.
Fowl tick	Chlordane 0.5% spray	1-2 gal./1,000 sq. ft.		Use chlordane, toxaphene and DDT for outside use only where ticks are numerous, such as trees, old roosts, etc.
	Toxaphene 0.5% spray	1-2 gal./1,000 sq. ft.		These materials may be used in buildings not currently being used by chickens.
	DDT 0.5% spray	1-2 gal./1,000 sq. ft.		
	Malathion 3% spray	1-2 gal./1,000 sq. ft.		Spray wall, ceilings, and floors thoroughly.
Scaley leg mites	Kerosene or crude oil	Dip scaley part of legs.		Two or three treatments at 2-week intervals may be necessary for control. Do not wet legs above where the feathers start.
Chiggers infesting range areas	Sulfur dust	Poultry on range, 25-50 lb. per acre depending on amount of vegetation		Chiggers are frequently an important pest of chickens and turkeys raised on the range. No limitations on use of sulfur.
	Malathion	15-20 lb. of 5% dust per acre or as a spray use 1½ pt. (5 lb. per gal.) per acre.		Remove birds for one day after application.

Caution: Follow all precautions on the labels; especially avoid contaminating poultry or eggs with any insecticide not labeled for direct use on poultry; eggs should not be allowed to come in contact with any insecticide.